



General

Guideline Title

2012 Infectious Diseases Society of America clinical practice guideline for the diagnosis and treatment of diabetic foot infections.

Bibliographic Source(s)

Lipsky BA, Berendt AR, Cornia PB, Pile JC, Peters EJ, Armstrong DG, Deery HG, Embil JM, Joseph WS, Karchmer AW, Pinzur MS, Senneville E. 2012 Infectious Diseases Society of America clinical practice guideline for the diagnosis and treatment of diabetic foot infections. Clin Infect Dis. 2012 Jun;54(12):e132-73. [345 references] [PubMed](#)

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Lipsky BA, Berendt AR, Deery HG, Embil JM, Joseph WS, Karchmer AW, Lefrock JL, Lew DP, Mader JT, Norden C, Tan JS. Diagnosis and treatment of diabetic foot infections. Clin Infect Dis 2004 Oct 1;39(7):885-910. [290 references]

Recommendations

Major Recommendations

Quality of evidence (high-quality, moderate-quality, low-quality, very low-quality) and strength of recommendation (strong, weak) ratings are defined at the end of the "Major Recommendations" field.

Recommendations for Managing Diabetic Foot Infections

I. In Which Diabetic Patients with a Foot Wound Should Infection Be Suspected, and How Should It Be Classified?

Recommendations

1. Clinicians should consider the possibility of infection occurring in any foot wound in a patient with diabetes (strong, low). Evidence of infection generally includes classic signs of inflammation (redness, warmth, swelling, tenderness, or pain) or purulent secretions, but may also include additional or secondary signs (e.g., nonpurulent secretions, friable or discolored granulation tissue, undermining of wound edges, foul odor) (strong, low).
2. Clinicians should be aware of factors that increase the risk for diabetic foot infections (DFI) and especially consider infection when these factors are present; these include a wound for which the probe-to-bone (PTB) test is positive; an ulceration present for >30 days; a history of recurrent foot ulcers; a traumatic foot wound; the presence of peripheral vascular disease in the affected limb; a previous lower extremity amputation; loss of protective sensation; the presence of renal insufficiency; or a history of walking barefoot (strong, low).
3. Clinicians should select and routinely use a validated classification system, such as that developed by the International Working Group on

the Diabetic Foot (IWGDF) (abbreviated with the acronym PEDIS [perfusion, extent (size), depth (tissue loss), infection, sensation (neuropathy)] or Infectious Diseases Society of America (IDSA), to classify infections and to help define the mix of types and severity of their cases and their outcomes (strong, high). The DFI Wound Score may provide additional quantitative discrimination for research purposes (weak, low). Other validated diabetic foot classification schemes have limited value for infection, as they describe only its presence or absence (moderate, low).

II. How Should a Diabetic Patient Presenting with a Foot Infection Be Assessed?

Recommendations

4. Clinicians should evaluate a diabetic patient presenting with a foot wound at 3 levels: the patient as a whole, the affected foot or limb, and the infected wound (strong, low).
5. Clinicians should diagnose infection based on the presence of at least 2 classic symptoms or signs of inflammation (erythema, warmth, tenderness, pain, or induration) or purulent secretions. They should then document and classify the severity of the infection based on its extent and depth and the presence of any systemic findings of infection (strong, low).
6. The developers recommend assessing the affected limb and foot for arterial ischemia (strong, moderate), venous insufficiency, presence of protective sensation, and biomechanical problems (strong, low).
7. Clinicians should debride any wound that has necrotic tissue or surrounding callus; the required procedure may range from minor to extensive (strong, low).

III. When and from Whom Should a Consultation Be Requested for a Patient with a Diabetic Foot Infection?

Recommendations

8. For both outpatients and inpatients with a DFI, clinicians should attempt to provide a well-coordinated approach by those with expertise in a variety of specialties, preferably by a multidisciplinary diabetic foot care team (strong, moderate). Where such a team is not yet available, the primary treating clinician should try to coordinate care among consulting specialists.
9. Diabetic foot care teams can include (or should have ready access to) specialists in various fields; patients with a DFI may especially benefit from consultation with an infectious disease or clinical microbiology specialist and a surgeon with experience and interest in managing DFIs (strong, low).
10. Clinicians without adequate training in wound debridement should seek consultation from those more qualified for this task, especially when extensive procedures are required (strong, low).
11. If there is clinical or imaging evidence of significant ischemia in an infected limb, the developers recommend the clinician consult a vascular surgeon for consideration of revascularization (strong, moderate).
12. The developers recommend that clinicians unfamiliar with pressure off-loading or special dressing techniques consult foot or wound care specialists when these are required (strong, low).
13. Providers working in communities with inadequate access to consultation from specialists might consider devising systems (e.g., telemedicine) to ensure expert input on managing their patients (strong, low).

IV. Which Patients with a Diabetic Foot Infection Should Be Hospitalized, and What Criteria Should They Meet before Being Discharged?

Recommendations

14. The developers recommend that all patients with a severe infection, selected patients with a moderate infection with complicating features (e.g., severe peripheral arterial disease [PAD] or lack of home support), and any patient unable to comply with the required outpatient treatment regimen for psychological or social reasons be hospitalized initially. Patients who do not meet any of these criteria, but are failing to improve with outpatient therapy, may also need to be hospitalized (strong, low).
15. The developers recommend that prior to being discharged, a patient with a DFI should be clinically stable; have had any urgently needed surgery performed; have achieved acceptable glycemic control; be able to manage (on his/her own or with help) at the designated discharge location; and have a well-defined plan that includes an appropriate antibiotic regimen to which he/she will adhere, an off-loading scheme (if needed), specific wound care instructions, and appropriate outpatient follow-up (strong, low).

V. When and How Should Specimen(s) Be Obtained for Culture from a Patient with a Diabetic Foot Wound?

Recommendations

16. For clinically uninfected wounds, the developers recommend not collecting a specimen for culture (strong, low).
17. For infected wounds, the developers recommend that clinicians send appropriately obtained specimens for culture prior to starting empiric

antibiotic therapy, if possible. Cultures may be unnecessary for a mild infection in a patient who has not recently received antibiotic therapy (strong, low).

18. The developers recommend sending a specimen for culture that is from deep tissue, obtained by biopsy or curettage after the wound has been cleansed and debrided. The developers suggest avoiding swab specimens, especially of inadequately debrided wounds, as they provide less accurate results (strong, moderate).

VI. How Should an Antibiotic Regimen for a Diabetic Foot Infection Be Initially Selected and Modified? (See question VIII for recommendations for antibiotic treatment of osteomyelitis)

Recommendations

19. The developers recommend that clinically uninfected wounds not be treated with antibiotic therapy (strong, low).
20. The developers recommend prescribing antibiotic therapy for all infected wounds, but caution that this is often insufficient unless combined with appropriate wound care (strong, low).
21. The developers recommend that clinicians select an empiric antibiotic regimen on the basis of the severity of the infection and the likely etiologic agent(s) (strong, low).
 - a. For mild to moderate infections in patients who have not recently received antibiotic treatment, the developers suggest that therapy just targeting aerobic gram-positive cocci (GPC) is sufficient (weak, low).
 - b. For most severe infections, the developers recommend starting broad-spectrum empiric antibiotic therapy, pending culture results and antibiotic susceptibility data (strong, low).
 - c. Empiric therapy directed at *Pseudomonas aeruginosa* is usually unnecessary except for patients with risk factors for true infection with this organism (strong, low).
 - d. Consider providing empiric therapy directed against methicillin-resistant *Staphylococcus aureus* (MRSA) in a patient with a prior history of MRSA infection; when the local prevalence of MRSA colonization or infection is high; or if the infection is clinically severe (weak, low).
22. The developers recommend that definitive therapy be based on the results of an appropriately obtained culture and sensitivity testing of a wound specimen as well as the patient's clinical response to the empiric regimen (strong, low).
23. The developers suggest basing the route of therapy largely on infection severity. The developers prefer parenteral therapy for all severe, and some moderate, DFIs, at least initially (weak, low), with a switch to oral agents when the patient is systemically well and culture results are available. Clinicians can probably use highly bioavailable oral antibiotics alone in most mild, and in many moderate, infections and topical therapy for selected mild superficial infections (strong, moderate).
24. The developers suggest continuing antibiotic therapy until, but not beyond, resolution of findings of infection, but not through complete healing of the wound (weak, low). The developers suggest an initial antibiotic course for a soft tissue infection of about 1–2 weeks for mild infections and 2–3 weeks for moderate to severe infections (weak, low).

VII. When Should Imaging Studies Be Considered to Evaluate a Diabetic Foot Infection, and Which Should Be Selected?

Recommendations

25. The developers recommend that all patients presenting with a new DFI have plain radiographs of the affected foot to look for bony abnormalities (deformity, destruction) as well as for soft tissue gas and radio-opaque foreign bodies (strong, moderate).
26. The developers recommend using magnetic resonance imaging (MRI) as the study of choice for patients who require further (i.e., more sensitive or specific) imaging, particularly when soft tissue abscess is suspected or the diagnosis of osteomyelitis remains uncertain (strong, moderate).
27. When MRI is unavailable or contraindicated, clinicians might consider the combination of a radionuclide bone scan and a labeled white blood cell scan as the best alternative (weak, low).

VIII. How Should Osteomyelitis of the Foot in a Patient with Diabetes Be Diagnosed and Treated?

Recommendations

28. Clinicians should consider osteomyelitis as a potential complication of any infected, deep, or large foot ulcer, especially one that is chronic or overlies a bony prominence (strong, moderate).
29. The developers suggest doing a probe-to-bone test for any DFI with an open wound. When properly conducted and interpreted, it can help to diagnose (when the likelihood is high) or exclude (when the likelihood is low) diabetic foot osteomyelitis (DFO) (strong, moderate).
30. The developers suggest obtaining plain radiographs of the foot, but they have relatively low sensitivity and specificity for confirming or excluding osteomyelitis (weak, moderate). Clinicians might consider using serial plain radiographs to diagnose or monitor suspected DFO

(weak, low).

31. For a diagnostic imaging test for DFO, the developers recommend using MRI (strong, moderate). However, MRI is not always necessary for diagnosing or managing DFO (strong, low).
32. If MRI is unavailable or contraindicated, clinicians might consider a leukocyte or antigranulocyte scan, preferably combined with a bone scan (weak, moderate). The developers do not recommend any other type of nuclear medicine investigations (weak, moderate).
33. The developers suggest that the most definitive way to diagnose DFO is by the combined findings on bone culture and histology (strong, moderate). When bone is debrided to treat osteomyelitis, the developers suggest sending a sample for culture and histology (strong, low).
34. For patients not undergoing bone debridement, the developers suggest that clinicians consider obtaining a diagnostic bone biopsy when faced with specific circumstances, e.g., diagnostic uncertainty, inadequate culture information, failure of response to empiric treatment (weak, low).
35. Clinicians can consider using either primarily surgical or primarily medical strategies for treating DFO in properly selected patients (weak, moderate). In noncomparative studies each approach has successfully arrested infection in most patients.
36. When a radical resection leaves no remaining infected tissue, the developers suggest prescribing antibiotic therapy for only a short duration (2–5 days) (weak, low). When there is persistent infected or necrotic bone, the developers suggest prolonged (≥ 4 weeks) antibiotic treatment (weak, low).
37. For specifically treating DFO, the developers do not currently support using adjunctive treatments such as hyperbaric oxygen therapy, growth factors (including granulocyte colony-stimulating factor), maggots (larvae), or topical negative pressure therapy (e.g., vacuum-assisted closure) (weak, low).

IX. In Which Patients with a Diabetic Foot Infection Should Surgical Intervention Be Considered, and What Type of Procedure May Be Appropriate?

Recommendations

38. The developers suggest that nonsurgical clinicians consider requesting an assessment by a surgeon for patients with a moderate or severe DFI (weak, low).
39. The developers recommend urgent surgical intervention for most foot infections accompanied by gas in the deeper tissues, an abscess, or necrotizing fasciitis, and less urgent surgery for wounds with substantial nonviable tissue or extensive bone or joint involvement (strong, low).
40. The developers recommend involving a vascular surgeon early on to consider revascularization whenever ischemia complicates a DFI, but especially in any patient with a critically ischemic limb (strong, moderate).
41. Although most qualified surgeons can perform an urgently needed debridement or drainage, the developers recommend that in DFI cases requiring more complex or reconstructive procedures, the surgeon should have experience with these problems and adequate knowledge of the anatomy of the foot (strong, low).

X. What Types of Wound Care Techniques and Dressings are Appropriate for Diabetic Foot Wounds?

Recommendations

42. Diabetic patients with a foot wound should receive appropriate wound care, which usually consists of the following:
 - a. Debridement, aimed at removing debris, eschar, and surrounding callus (strong, moderate). Sharp (or surgical) methods are generally best (strong, low), but mechanical, autolytic, or larval debridement techniques may be appropriate for some wounds (weak, low).
 - b. Redistribution of pressure off the wound to the entire weight-bearing surface of the foot ("off-loading"). While particularly important for plantar wounds, this is also necessary to relieve pressure caused by dressings, footwear, or ambulation to any surface of the wound (strong, high).
 - c. Selection of dressings that allow for moist wound healing and control excess exudation. The choice of dressing should be based on the size, depth, and nature of the ulcer (e.g., dry, exudative, purulent) (strong, low).
43. The developers do not advocate using topical antimicrobials for treating most clinically uninfected wounds.
44. No adjunctive therapy has been proven to improve resolution of infection, but for selected diabetic foot wounds that are slow to heal, clinicians might consider using bioengineered skin equivalents (weak, moderate), growth factors (weak, moderate), granulocyte colony-stimulating factors (weak, moderate), hyperbaric oxygen therapy (strong, moderate), or negative pressure wound therapy (weak, low).

Definitions:

Strength of Recommendations and Quality of the Evidence			
Strength of Recommendation and Quality of Evidence	Clarity of Balance between Desirable and Undesirable Effects	Methodologic Quality of Supporting Evidence (examples)	Implications
Strong Recommendation, High-quality evidence	Desirable effects clearly outweigh undesirable effects, or vice versa	Consistent evidence from well-performed randomized controlled trials (RCTs) or exceptionally strong evidence from unbiased observational studies	Recommendation can apply to most patients in most circumstances. Further research is unlikely to change confidence in the estimate of effect.
Strong Recommendation, Moderate-quality evidence	Desirable effects clearly outweigh undesirable effects, or vice versa	Evidence from RCTs with important limitations (inconsistent results, methodologic flaws, indirect, or imprecise) or exceptionally strong evidence from unbiased observational studies	Recommendation can apply to most patients in most circumstances; further research (if performed) is likely to have an important impact on confidence in the estimate of effect and may change the estimate.
Strong Recommendation, Low-quality evidence	Desirable effects clearly outweigh undesirable effects, or vice versa	Evidence for at least 1 critical outcome from observational studies, RCTs with serious flaws or indirect evidence	Recommendation may change when higher-quality evidence becomes available; further research (if performed) is likely to have an important impact on confidence in the estimate of effect and is likely to change the estimate.
Strong Recommendation, Very low-quality evidence (very rarely applicable)	Desirable effects clearly outweigh undesirable effects, or vice versa	Evidence for at least 1 critical outcome from unsystematic clinical observations or very indirect evidence	Recommendation may change when higher-quality evidence becomes available; any estimate of effect for at least 1 critical outcome is very uncertain
Weak Recommendation, High-quality evidence	Desirable effects closely balanced with undesirable effects	Consistent evidence from well-performed RCTs or exceptionally strong evidence from unbiased observational studies	The best action may differ depending on circumstances or patients or societal values. Further research is unlikely to change confidence in the estimate of effect
Weak Recommendation, Moderate-quality evidence	Desirable effects closely balanced with undesirable effects	Evidence from RCTs with important limitations (inconsistent results, methodological flaws, indirect, or imprecise) or exceptionally strong evidence from unbiased observational studies	Alternative approaches likely to be better for some patients under some circumstances. Further research (if performed) is likely to have an important impact on confidence in the estimate of effect and may change the estimate
Weak Recommendation, Low-quality evidence	Uncertainty in the estimates of desirable effects, harms, and burden; desirable effects, harms, and burden may be closely balanced	Evidence for at least 1 critical outcome from observational studies, RCTs with serious flaws, or indirect evidence	Other alternatives may be equally reasonable. Further research is very likely to have an important impact on confidence in the estimate of effect and is likely to change the estimate
Weak Recommendation, Very low-quality evidence	Major uncertainty in the estimates of desirable effects, harms, and burden; desirable effects may or may not be balanced with undesirable effects or may be closely balanced	Evidence for at least 1 critical outcome from unsystematic clinical observations or very indirect evidence	Other alternatives may be equally reasonable. Any estimate of effect, for at least 1 critical outcome, is very uncertain

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Diabetic foot infections (DFIs)

Guideline Category

Diagnosis

Evaluation

Management

Risk Assessment

Treatment

Clinical Specialty

Endocrinology

Family Practice

Infectious Diseases

Internal Medicine

Orthopedic Surgery

Podiatry

Surgery

Intended Users

Advanced Practice Nurses

Nurses

Physician Assistants

Physicians

Podiatrists

Guideline Objective(s)

To update the 2004 Infectious Diseases Society of America (IDSA) clinical practice guideline for the diagnosis and treatment of diabetic foot infections and to make it a companion to the previous work that not only updates the recommendations on the basis of recent data, but makes them relatively simple and clear

Target Population

Diabetic patients with a foot wound

Interventions and Practices Considered

Diagnosis/Evaluation/Risk Assessment

1. Assessing diabetic patients for risk and evidence of foot infection
2. Use of a validated classification scheme to classify foot infections
3. Evaluation of a foot wound on three levels: the patient, wound, and infection
4. Consultation with specialists from a variety of disciplines and with expertise in diabetic foot infection
5. Criteria for hospitalization and discharge
6. Criteria for obtaining specimens for culture from infected wounds
7. Plain radiographs of the affected foot
8. Magnetic resonance imaging for more specific or sensitive imaging and for definitive diagnosis of osteomyelitis
9. Combination of a radionuclide bone scan and a labeled white blood cell scan
10. Probe-to-bone test for any foot infection with an open wound
11. Bone biopsy for diagnosis of osteomyelitis

Treatment/Management

1. Selecting and modifying antibiotic regimens for infected wounds
2. Treatment of osteomyelitis complications
3. Surgical intervention (urgent or nonurgent)
4. Involvement of vascular surgeon when appropriate
5. Debridement with appropriate sharp, mechanical, autolytic, or larval techniques
6. Off-loading of foot pressure
7. Selection of correct dressings and wound care techniques
8. Topical antimicrobials (not usually recommended)
9. Bioengineered skin equivalents, growth factors, granulocyte colony-stimulating factors, hyperbaric oxygen therapy, and negative pressure wound therapy in selected cases

Major Outcomes Considered

- Sensitivity and specificity of diagnostic tests
- Severe morbidities
- Amputation
- Hospital length of stay
- Financial burden

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Searches of Unpublished Data

Description of Methods Used to Collect/Select the Evidence

Literature Review and Analysis

Following the Infectious Diseases Society of America (IDSA) format, the panel selected the questions to address and assigned each member to draft a response to at least 1 question in collaboration with another panel member. Panel members thoroughly reviewed the literature pertinent to the selected field. In addition, the panel chair searched all available literature, including PubMed/Medline, Cochrane Library, EBSCO, CINAHL, Google Scholar, the National Guideline Clearinghouse, ClinicalTrials.gov, references in published articles, pertinent Web sites, textbooks, and abstracts of original research and review articles in any language on foot infections in persons with diabetes. For the past 8 years the chair has also conducted a prospective systematic literature search, using a strategy developed with the help of a medical librarian, for a weekly literature review for updates on any aspect of diabetic foot infections (DFIs) in all languages.

The panel chair also searched publications listed in PubMed from 1964 to January 2011 to find articles that assessed diabetic patients for risk factors for developing a foot infection using the following query: ("diabetic foot" [MeSH Terms] OR ("diabetic" [All Fields] AND "foot" [All Fields]) OR "diabetic foot" [All Fields]) AND ("infection" [MeSH Terms] OR "infection" [All Fields] OR "communicable diseases" [MeSH Terms] OR ("communicable" [All Fields] AND "diseases" [All Fields]) OR "communicable diseases" [All Fields]) AND ("risk factors" [MeSH Terms] OR ("risk" [All Fields] AND "factors" [All Fields]) OR "risk factors" [All Fields]).

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

See the "Rating Scheme for the Strength of the Recommendations" field.

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review

Description of the Methods Used to Analyze the Evidence

In updating this guideline the panel followed the newly created Grading of Recommendations Assessment, Development and Evaluation (GRADE) system recommended by Infectious Diseases Society of America (IDSA) (see the "Rating Scheme for the Strength of the Recommendations" fields). This included systematically weighting the quality of the available evidence and grading the recommendations. To evaluate evidence, the panel followed a process consistent with other IDSA guidelines, including a systematic weighting of the quality of the evidence and the grade of recommendation. High-quality evidence does not necessarily lead to strong recommendations; conversely, strong recommendations can arise from low-quality evidence if one can be confident that the desired benefits clearly outweigh the undesirable consequences. The main advantages of the GRADE approach are the detailed and explicit criteria for grading the quality of evidence and the transparent process for making recommendations.

This system requires that the assigned strength of a recommendation be either "strong" or "weak." The main criterion for assigning a "strong" recommendation is that the potential benefits clearly outweigh the potential risks. The panel chair and vice-chair reviewed all the recommendation gradings and then worked with the panel to achieve consensus via teleconference and e-mail.

Methods Used to Formulate the Recommendations

Description of Methods Used to Formulate the Recommendations

A panel of 12 experts was convened, including specialists in infectious diseases, primary care/general internal medicine, hospital medicine, wound care, podiatry, and orthopedic surgery. The panel included physicians with a predominantly academic position, those who are mainly clinicians, and those working in varied inpatient and outpatient settings. Among the 12 panel members, 6 had been on the previous diabetic foot infection (DFI) guideline panel, and 4 are based outside the United States.

Consensus Development Based on Evidence

Most of the panel members met in person twice, at the time of the 2007 and 2008 Infectious Diseases Society of America (IDSA) annual meetings. They also held 2 teleconferences and frequently corresponded electronically. The chair presented a preliminary version of the guidelines at the 2009 IDSA annual meeting and sought feedback by distributing a questionnaire to those attending the lecture.

All members of the panel participated in the preparation of questions for the draft guideline, which were then collated and revised by the chair and vice-chair, and this draft was disseminated for review by the entire panel.

Rating Scheme for the Strength of the Recommendations

Strength of Recommendations and Quality of the Evidence			
Strength of Recommendation and Quality of Evidence	Clarity of Balance between Desirable and Undesirable Effects	Methodologic Quality of Supporting Evidence (examples)	Implications
Strong Recommendation, High-quality evidence	Desirable effects clearly outweigh undesirable effects, or vice versa	Consistent evidence from well-performed randomized controlled trials (RCTs) or exceptionally strong evidence from unbiased observational studies	Recommendation can apply to most patients in most circumstances. Further research is unlikely to change confidence in the estimate of effect.
Strong Recommendation, Moderate-quality evidence	Desirable effects clearly outweigh undesirable effects, or vice versa	Evidence from RCTs with important limitations (inconsistent results, methodologic flaws, indirect, or imprecise) or exceptionally strong evidence from unbiased observational studies	Recommendation can apply to most patients in most circumstances; further research (if performed) is likely to have an important impact on confidence in the estimate of effect and may change the estimate.
Strong Recommendation, Low-quality evidence	Desirable effects clearly outweigh undesirable effects, or vice versa	Evidence for at least 1 critical outcome from observational studies, RCTs with serious flaws or indirect evidence	Recommendation may change when higher-quality evidence becomes available; further research (if performed) is likely to have an important impact on confidence in the estimate of effect and is likely to change the estimate.
Strong Recommendation, Very low-quality evidence (very rarely applicable)	Desirable effects clearly outweigh undesirable effects, or vice versa	Evidence for at least 1 critical outcome from unsystematic clinical observations or very indirect evidence	Recommendation may change when higher-quality evidence becomes available; any estimate of effect for at least 1 critical outcome is very uncertain
Weak Recommendation, High-quality	Desirable effects closely balanced with undesirable effects	Consistent evidence from well-performed RCTs or exceptionally strong evidence from unbiased	The best action may differ depending on circumstances or patients or societal values. Further research is unlikely to change

Strength of Recommendation	Recommendations and Quality of the Evidence	observational studies	confidence in the estimate of effect
Strong recommendation, High-quality evidence	Desirable effects closely balanced with undesirable effects	Evidence from RCTs with important limitations (inconsistent supporting methodology (e.g., samples indirect, or imprecise) or exceptionally strong evidence from unbiased observational studies	Alternative approaches likely to be better for some patients under some circumstances.
Weak recommendation, Moderate-quality evidence	Desirable and Undesirable Effects		Further research (if performed) is likely to have an important impact on confidence in the estimate of effect and may change the estimate
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Cost Analysis

Published cost analyses were reviewed.

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

All members of the panel participated in the preparation of questions for the draft guideline, which were then collated and revised by the chair and vice-chair, and this draft was disseminated for review by the entire panel. The guideline was reviewed and endorsed by the Society of Hospital Medicine and the American Podiatric Medical Association. The developers also sought and received extensive feedback from several external reviewers, and the guideline manuscript was reviewed and approved by the Infectious Diseases Society of America (IDSA) Standards and Practice Guidelines Committee (SPGC) and by the IDSA Board of Directors.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Use of this guideline may reduce major morbidity, including physical and emotional distress and lost mobility, as well as substantial direct and

indirect financial costs.

Potential Harms

- Antibiotic use encourages antimicrobial resistance, incurs financial cost, and may cause drug-related adverse effects; its use is discouraged as therapy of uninfected ulcers.
- Definitive surgical solutions to osteomyelitis, such as ray and transmetatarsal amputations, may risk architectural reorganization of the foot, resulting in altered biomechanics and additional cycles of "transfer ulceration," that is, skin breakdown at a new high-pressure site. Neuropathy and attenuated systemic manifestations of infection may render osteomyelitis tolerable for the diabetic patient and may also mask progressive bone destruction. Delayed or inadequate surgery may impair control of infection and allow additional bone or soft tissue necrosis.

Contraindications

Contraindications

- Contraindications to prolonged antibiotic therapy include high risk for *Clostridium difficile* infection.
- Debridement may be relatively contraindicated in wounds that are primarily ischemic.

Qualifying Statements

Qualifying Statements

It is important to realize that guidelines cannot always account for individual variation among patients. They are not intended to supplant physician judgment with respect to particular patients or special clinical situations. Infectious Diseases Society of America (IDSA) considers adherence to these guidelines to be voluntary, with the ultimate determination regarding their application to be made by the physician in the light of each patient's individual circumstances.

Implementation of the Guideline

Description of Implementation Strategy

1. Deploying a multidisciplinary team reduces the likelihood and extent of lower extremity amputations in diabetic patients with a foot infection. Medical institutions, insurance companies, and other healthcare systems should encourage the development of the following:
 - a. Rapid-response or "hot" teams that can provide appropriate initial evaluation and recommendations for care.
 - b. Diabetic foot specialty teams or centers of excellence to which patients can later be referred for further consultation, if necessary. These teams should be composed of experienced medical, surgical, or nursing providers, working with specified, evidence-based procedures. Optimally they should include a foot specialist, a vascular surgeon, and a wound care specialist; they should also include or have access to specialists in infectious diseases or clinical microbiology and other disciplines (e.g., diabetes, pharmacy).
 - c. In communities where this is not practical, providers should seek telemedicine consultations from experts, or at least attempt to develop formal or informal consulting relationships, to ensure prompt evaluation and treatment by appropriate specialists, when needed.
2. The panel encourages healthcare organizations to develop systems to regularly audit various aspects of their processes and key outcomes of care for patients with diabetic foot infections (DFIs) who are treated in their institutions. Organizations should then use the results of these audits to improve care and better outcomes.
3. Healthcare organizations should ensure that providers who evaluate and manage patients with DFIs have ready access to the required diagnostic and therapeutic equipment (including a monofilament, scalpel, sterile metal probe, forceps, tissue scissors), as well as advanced imaging and vascular diagnostic equipment and specialists.

4. Healthcare organizations should ensure implementation of measures to prevent spread of multidrug-resistant organisms in both inpatient and outpatient settings, and the panel encourages providers to monitor bacterial resistance patterns of diabetic foot isolates.

Implementation Tools

Audit Criteria/Indicators

Mobile Device Resources

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

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Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2004 Oct 1 (revised 2012 Jun)

Guideline Developer(s)

Infectious Diseases Society of America - Medical Specialty Society

Source(s) of Funding

Infectious Diseases Society of America (IDSA)

Guideline Committee

Expert Panel

Composition of Group That Authored the Guideline

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Financial Disclosures/Conflicts of Interest

All members of the expert panel complied with the Infectious Diseases Society of America (IDSA) policy regarding conflicts of interest, which requires disclosure of any financial or other interest that might be construed as constituting an actual, potential, or apparent conflict. Members of the expert panel were provided a conflicts of interest disclosure statement from IDSA and were asked to identify ties to companies developing products that might be affected by promulgation of the guideline. The statement requested information regarding employment, consultancies, stock ownership, honoraria, research funding, expert testimony, and membership on company advisory committees. The panel was instructed to make decisions on a case-by-case basis as to whether an individual's role should be limited as a result of a conflict, but no limiting conflicts were identified.

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All authors have submitted the International Committee of Medical Journal Editors (ICMJE) Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

Guideline Endorser(s)

American Podiatric Medical Association - Medical Specialty Society

Society for Hospital Medicine - Professional Association

Guideline Status

This is the current release of the guideline.

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Guideline Availability

Electronic copies: Available in Portable Document Format (PDF) from the [Infectious Diseases Society of America \(IDSA\) Web site](#)

Availability of Companion Documents

The following is available:

- A version of the guideline for mobile devices is available from A PDA version of the original guideline document is available from the [Infectious Diseases Society of America \(IDSA\) Web site](#) .

In addition, performance measures are available in the [original guideline document](#) .

Patient Resources

None available

NGC Status

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